GOAL 4
HEALTHY COMMUNITIES AND ECOSYSTEMS

Protect, sustain or restore the health of people, communities, and ecosystems using integrated and comprehensive approaches and partnerships.

To achieve its fourth goal, Healthy Communities and Ecosystems, EPA must bring together a variety of programs, tools, approaches, and resources; create strong partnerships with federal, state, tribal, and local government agencies; and enlist the support of many stakeholders. Because Goal 4 is unique in its cross-media, cross-Agency approach, building a cohesive, integrated strategy is critical for achieving results.

EPA must manage environmental risks to watersheds, communities, homes and workplaces to protect our health and the environmental integrity of ecosystems. The Agency will employ a mix of regulatory programs and alternative voluntary approaches to achieve results efficiently and in innovative, sustainable ways. For example, preventing pollution at the source is a key strategy for reducing risk and environmental impact. However, where programs to prevent pollution or ecosystem damage are not viable, EPA promotes waste minimization, avoidance of impact on habitat, and disposal and remediation. In managing risk, EPA will direct its efforts toward the greatest threats in our communities, homes, and workplaces, including those to sensitive populations including children, the elderly, and Native Americans.

A key component of this goal is protecting human health and the environment by identifying, assessing, and reducing the risks presented by the thousands of chemicals on which our society and economy have come to depend. These include the pesticides we use to meet national and global demands for food and the industrial and commercial chemicals ubiquitous in our homes, our workplaces, and the products we use. EPA must also address the emerging challenges posed by a growing array of biological organisms—naturally occurring and, increasingly, genetically engineered—that are being used in industrial and agricultural processes.

Ensuring the safety of America's food supply is critical to public health and a primary concern for the Agency. Production processes designed to ensure that food is abundant, affordable, and safe may lead to adverse environmental and health effects. Modern pest control methods, for example, may present risks to human health and the environment. And the importance of safe pesticide use extends beyond the farm; pesticides remain essential for controlling pests such as insects, weeds, bacteria, and others in homes, gardens, hospitals, and drinking water treatment facilities. The Nation's reliance on pesticides makes it all the more critical that they are safe when they enter and remain in the

marketplace.

Building a community's capability to make decisions that affect the environment is at the heart of the community-centered work under this goal. Preparing for potential chemical spills is one part of community planning that EPA can help facilitate. The Brownfields Program addresses another community development issue: the over 600,000 properties that have been abandoned or underused due to possible contamination from previous industrial, mining-related, or other uses. The Program blends legal authorities, community development and clean-up expertise, and local decision-making to assess and clean up brownfields sites. EPA's efforts to share information and build community capacity offer the public the tools they will need in considering the many aspects of planned development or re-development.

EPA's ecosystem protection programs encompass a wide range of approaches that address specific at-risk regional areas along with larger categories of threatened systems, such as estuaries and wetlands. Locally-generated pollution, combined with pollution carried by rivers and streams and through air deposition, can collect in these closed and semi-closed ecosystems, degrading them over time.

At the Mexican Border, for example, local pollution and infrastructure are priorities for the Mexican and the U.S. governments under the Border 2012 agreement. Safe drinking water is a particular emphasis. Large water bodies like the Gulf of Mexico, the Great Lakes, and the Chesapeake Bay are surrounded by industrial and other development and have been exposed to substantial pollution over many years at levels higher than current environmental standards permit. As a result, the volume of pollutants in these water bodies has exceeded their natural ability to restore balance. Working with stakeholders, EPA has established special programs to protect and restore these unique resources by addressing the vulnerabilities for each. Where the water meets the land, coastal estuaries or wetlands, are also vulnerable. As population in coastal regions grows, the challenges to preserve and protect these important ecosystems increase. Coastal areas are testing grounds for combining innovative and community-based approaches with national guidelines and inter-agency coordination to achieve results.

Children and the aging face significant and unique health threats from a range of environmental exposures. Pound for pound, children breathe more air, drink more water, and eat more food than adults. Their behavior patterns increase their exposure to potential toxics. Because their systems are still developing, they may be more vulnerable to environmental risks, including asthma-exacerbating air pollution, lead-based paint in older homes, treatment resistant microbes in drinking water, and persistent chemicals that may cause cancer or induce reproductive or developmental changes.

Due to the normal decrease in biological capacity that accompanies the aging process, even

older Americans in good health may be at increased risk from exposure to environmental pollutants. As we age, our bodies are less able to detoxify and eliminate toxins. EPA has conducted many studies on environmental hazards that may affect the health of older persons. EPA will focus on these sensitive populations by increasing our understanding of these issues, building infrastructure and capacity, and providing information and tools needed to assess and prevent adverse impacts.

All of EPA's activities will rely on the latest and best scientific information. Sound science must be the basis of standard-setting. It also must guide us in identifying and addressing emerging issues, as well as updating and advancing our understanding of long-standing human health and environmental challenges. To help us focus our resources most effectively, EPA will also continue to improve its development and use of environmental indicators.

Sound science and carefully designed programs are critical to protecting people's health and the environment from inadvertent pollution. These same components are crucial to protecting us from deliberate attack. EPA is an integral part of the Nation's homeland security work. The Agency is taking a proactive approach to detecting, preventing and responding to potential threats. All programs—air , water, waste, industrial chemicals and pesticides, research and others—must be engaged, bringing to bear their special expertise and network of state, tribal, community, academic, industry, and other contacts to ensure protection and build response capabilities.

Goal 4 touches on every aspect of our Nation's environmental and public health. Multimedia impacts, especially on vulnerable ecosystems, and international and local decision making are hallmarks of the work under this goal.

OBJECTIVES

Objective 4.1: Chemical, Organism and Pesticide Risks. Prevent and reduce pesticide, chemical, and genetically engineered biological organism risks to humans, communities and ecosystems.

Sub-objective 4.1.1: Toxic Pesticide Exposure. Through 2008, protect human health, communities and ecosystems from pesticide use by reducing exposure to the more toxic pesticides.

Strategic Targets:

- Through 2008, systematically review pesticides in the marketplace to ensure that they meet the most current safety standards: re-registration (100% by

2008) , tolerance reassessment (100% by 2006) and registration review.

- Through 2008, protect endangered and threatened species by ensuring that none of the 15 species on the EPA/Fish and Wildlife Service/U.S. Department of Agriculture priority list of threatened or endangered species will be jeopardized by exposure to pesticides.

- By 2008, reduce by 30 percent from 1995 levels the number of incidents involving mortalities to terrestrial and aquatic wildlife caused by pesticides.

- By 2008, appropriately factor unique tribal pesticide exposure scenarios into 7 percent of annual registration and re-registration actions.

- By 2008, occurrence of residues of carcinogenic and cholinesterase inhibiting neurotoxic pesticides on foods eaten by children will have decreased by 30 percent from their average 1994 to 1996 levels.

- By 2008, at least 11 percent of acre treatments will use applications of reduced risk pesticides.

- By 2008, reduce by 20% (2003 baseline), from key source countries, inventories of obsolete persistent organic pollutants (POPs) pesticides which have the greatest potential for contributing to long-range environmental transport of these pollutants to the US.

Sub-objective 4.1.2: Pesticide Health Safety Standards. Through 2008, protect human health, communities and ecosystems from pests and disease by ensuring availability of pesticides, including public health pesticides and antimicrobial products, that meet the latest safety standards.

Strategic Targets:

- By 2008, reduce registration decision times by 10 % for conventional new active ingredients and 5% for reduced risk new active ingredients (including biopesticides) from the FY 2002 baseline.

- By 2006, reduce re-registration decision time (issuance of Re-registration Eligibility Decision) by 10% from the initiation of public participation to the signed Re-registration Eligibility Decision from the FY 2002 baseline.

- Through 2008, ensure new pesticide registration actions (including new active ingredients, new uses) meet new health standards and are environmentally safe.

- Through 2008, maintain timeliness of section 18 emergency exemption decisions (2002 baseline).

Sub-objective 4.1.3: Chemical and Biological Risks. Through 2008, prevent and reduce chemical and biological organism risks to humans, communities and ecosystems.

Strategic Targets:

- Through 2008, obtain, review for adequacy, and make public Screening Information Data Set (SIDS) information for 70% of the 2,800 High Production Volume (HPV) chemicals.

- Through 2008, obtain and make available for use by EPA and others two cycles of TSCA Inventory Update Rule reporting data on chemicals produced in or imported into America, including the initial cycle for obtaining additional exposure-related data authorized under the TSCA Inventory Update Rule Amendments.

- Through 2008, complete risk assessments for 20 chemicals to which children may be disproportionately exposed.

- Through 2008, the Sustainable Futures initiative will increase the efficiency of EPA's Pre-Manufacture Notice (PMN) review program, with an expected outcome of 40 PMNs per year that can be granted expedited reviews (240 PMNs cumulatively commencing in 2003 from a baseline of 0 expedited PMN reviews through 2002).

- Through 2008, reduce relative risks to chronic human health associated with environmental releases of industrial chemicals in commerce by 6% from 2002 levels, as measured by EPA's Risk Screening Environmental Indicators model.

- By 2008, eliminate in American hospitals the use of mercury and reduce the overall hospital waste volume by 33%, from a 1998 baseline.

- Through 2008, reduce the number of childhood lead poisoning cases to

150,000, from approximately 400,000 cases in 1999/2000.

- By 2008, reduce by 50% from 2003 baseline levels the number of people in specified key countries who are exposed to air pollution from leaded gasoline.

- Through 2008, ensure the safe disposal annually of 19,000 large capacitors and 10,000 transformers containing PCBs, safely reducing 2000 inventories of PCB large capacitors from 1.42 million to 1.27 million units (11%) and PCB transformers from 2.03 million to 1.95 million units (4%).

- By 2008, reduce by 20%, from 2003 baseline levels in key source countries, inventories of PCBs which have the greatest potential for contributing to long-range environmental transport of these pollutants to the US.

- Through 2008, collect, process, and make public annual Toxics Release Inventory (TRI) reporting data.

Sub-objective 4.1.4: Facility Risk Reduction. Through 2008, protect human health, communities, and ecosystems from chemical risks and releases through facility risk reduction efforts and building community infrastructures.

Strategic Targets:

- By 2010, 30% of those facilities with hazardous chemicals, including Risk Management Plan (RMP) facilities, will have reduced their risk of having a major chemical accident.

- By 2010, 50% of local communities or Local Emergency Planning Committees (LEPC) will have incorporated facility risk information into their emergency preparedness and community right-to-know programs.

Means and Strategies to Achieve Objective 1

Chemicals, pesticides, and biological organisms can pose risks to individuals, to communities, and to ecosystems. Under this Objective, EPA aims to prevent or significantly reduce these substantial risks by:

- Identifying and assessing chemical, pesticide, and microorganism potential risks;
- Setting priorities for addressing these risks;

- Developing and implementing strategies aimed at preventing risks and managing those risks that cannot be prevented;
- Implementing regulatory measures, such as systematic review of pesticides and new chemicals, and developing and implementing procedures for safe production, use, storage, and handling of chemicals, pesticides and microorganisms;
- Employing innovative voluntary measures, such as promoting the use of reduced-risk pesticides and challenging companies to assess and reduce chemical risks and develop safer and less polluting new chemicals, processes, and technologies;
- Conducting outreach and training and establishing partnerships; and,
- Reducing or eliminating risks from potential chemical releases.

While EPA will use these approaches to address risks associated with chemicals and pesticides directly, much of this work will be accomplished by our co-regulators and co-implementors, the states and tribes, with the support of industry, environmental groups, and other stakeholders. In addition, improving the ability of communities to address local problems is a critical part of all efforts to reduce these risks.

Reducing Pesticide Risks

Pesticides are essential for controlling insects, weeds, bacteria and other pests on farms and in homes, gardens, and hospitals. It is estimated that pesticides are used on more than 1 million farms and in 90 million households. These products regulated and held to safety standards prescribed by the Federal Insecticide, Fungicide, and Rodenticide Act.

One measure of potential health risk is the extent to which pesticide residues are found in food. Reducing pesticide exposure through food, particularly exposure to the more toxic pesticides, will enable progress toward our goal of reducing risk to humans and ecosystems from pesticide use. EPA will continue to address this challenge by setting tolerances, reviewing new and existing tolerance exemptions for inert ingredients, and reassessing tolerances established prior to the health standard set by the Food Quality Protection Act (FQPA). EPA will meet its statutory goal of reassessing these tolerances in tandem with the reregistration program by 2006 and 2008 respectively. As provided for under FQPA, EPA will review pesticides on a 15-year cycle, allowing the Agency to apply new science and risk criteria to ensure that risk evaluation and risk management information remain current.

FQPA added cumulative, aggregate, and other new risk assessment requirements to the review of pesticides. Implementation of the cumulative risk policy, completed in late 2002, will impact risk mitigation measures and determine which pesticides are available for what purposes. These changes will reduce the risks posed by pesticides in food and the risks to workers, farm families, and vulnerable populations posed by their exposure to pesticides. EPA will continue to use U.S. Department of

Agriculture and Food and Drug Administration food residue data to track progress toward risk reduction through food and to meet the statutory requirement of reassessing existing tolerances by 2006. As the re-registration program draws to a close, EPA will implement a registration review program to ensure that pesticides in the marketplace continue to meet the most current safety standards as required by FQPA. This program systematically reviews existing pesticides on a 15-year cycle. As we review new and old pesticides, we will continue to improve our processes to reflect lessons we have learned, additional information on pesticides resulting from scientific advances, more sophisticated methods and tools, and identification of new risks or threats.

Since pesticide use also affects ecosystems, our reviews consider impacts to water resources, soil, and wildlife to prevent unreasonable harm. For example, EPA is collaborating with the Fish and Wildlife Service and the National Marine Fisheries Service to improve our efforts to protect endangered species by strengthening our implementation of the Endangered Species Act (ESA). We will be working to identify changes to existing policies, regulations, and the regulatory processes that will result in better protection of endangered species with minimal impact on food producers and pesticide users. Integrating the ESA consultation process with EPA regulatory programs will also help to protect listed species and avoid adverse changes to critical habitats.

Pesticide and pest control issues extend beyond the farm. EPA registers antimicrobials used by public drinking water treatment facilities and by food processing plants and hospitals to disinfect surfaces. Effective antimicrobials are of growing importance as many serious disease-causing organisms become resistant to our antibiotic procedures. Public health officials use pesticides to control mosquitos, and homeowners use pesticide products to control flies, rats, and roaches, resulting in human health protection and consumer benefits such as controlling West Nile Virus or germs in the home.

Over the last several years, concern has grown about exposure to endocrine disrupting or hormonally active chemicals. Evidence suggests that exposure to chemicals that mimic hormones (endocrine disruptors) may cause adverse health effects in wildlife and potentially affect human health as well. However, there are many uncertainties in our knowledge of endocrine disruptors. EPA is working to identify the nature of adverse effects and the dose-response relationships involved and to determine how common is the potential in chemicals for endocrine disruption.

The Agency needs valid tests for endocrine disruption that can be integrated into the review of chemicals and pesticides now on the market along with new ones to be licensed. Over the next several years, the Agency will complete validation of screens and tests that are necessary before large-scale reviews can take place. The screening and testing program is of great interest to a wide range of stakeholders. EPA is working to minimize the use of animals for the program. A Federal Advisory Sub-Committee has been convened to provide scientific and technical advice to the Agency as the

screens and tests are developed and validated.

Lastly, outreach, training, and partnerships will play an integral role in meeting our goals. For example, to meet our domestic regulatory goals, EPA will address international sources of pesticides by (1) promoting a better understanding of the impact of pollutants from other countries and regions on the United States and of our emissions on other countries and (2) reducing pollution sources abroad through outreach, pollution prevention, and capacity-building measures such as cost-effective and appropriate technology transfer.

Reducing Risks from Chemicals and Biological Organisms

Screening and Risk Assessment

EPA's strategy to prevent and reduce risks posed by chemicals and microorganisms comprises three primary approaches: preventing the introduction into U.S. commerce of chemicals that pose unreasonable risks; effectively screening the stock of chemicals already in use for potential risk; and developing and implementing action plans to reduce use of and exposure to chemicals that have been demonstrated to harm humans and the environment. EPA intends to work with states and tribes, other federal agencies, the private sector, and international entities to implement this strategy and, in particular, to make protection of children and the aging a fundamental goal of public health and environmental protection in the United States and around the world.

The Toxic Substances Control Act (TSCA) requires that EPA review all new chemicals prior to production or import and be notified of significant new uses for certain chemicals that have already been reviewed. EPA's Pre-Manufacture Notice (PMN) Review Program typically assesses 1,500 to 2,000 new chemicals every year, a rate expected to continue through 2008. To keep pace with expanding review requirements (such as preventing the introduction of persistent bioaccumulative toxics [PBTs] or considering the use of chemicals as potential weapons of terror), while meeting the statutorily mandated 90-day time limit for these reviews, the Agency is developing an expanded set of screening tools. These tools will enable us to use the limited data that companies provide in their PMN submissions to predict potential hazards, exposures, and risks quickly and effectively. Tools include the PBT Profiler and other structure-activity-relationship-based models; models that estimate fate and concentrations of chemicals released to the environment, including chemicals released from consumer products; and models to estimate workplace exposures. These tools will be critical for meeting the zero-tolerance standard implicit in our 2008 strategic target for these reviews.

EPA is also shifting to a Sustainable Futures strategy to discourage development of potentially risky new chemicals at the earliest stages of product, process, and service design. The Sustainable Futures-P2 Framework initiative (see 67 FR 76282 and http://www.epa.gov/oppt/p2framework/)

provides chemical manufacturers with the same hazard and risk screening tools that EPA uses in its PMN reviews. For example, EPA made the PBT Profiler public in 2002, to help industrial chemical designers avoid uses of PBT chemicals. Industry, academia, and environmental advocates have praised this effort. Over the next several years, the Agency will provide these tools and target training to companies that can use them to design and develop safer, less risky new chemicals. Under the current pilot project, participating companies will be offered (subject to certain conditions) regulatory flexibility in the form of expedited review of their qualifying chemicals, which will allow manufacture of the new chemical to begin 45 days earlier. The intense interest expressed thus far suggests that this will be a powerful incentive for many companies to conduct their own hazard/risk screening. Effective use of these tools by companies that submit PMNs will enable EPA to focus its limited PMN-review resources on those chemicals that have not been pre-screened.

By 2008, EPA will make substantial progress in screening, assessing, and reducing the 66,600 chemicals that were in use prior to the enactment of TSCA. Thousands of these chemicals are still used today, and nearly 3,000 of them are "high production volume" [HPV] chemicals, produced in quantities exceeding 1 million pounds per year. Through the HPV Challenge Program, EPA will collect or develop the data needed to screen for risks associated with 70 percent of these chemicals by 2008. Under the Program, more than 300 companies and 101 consortia are voluntarily providing the screening information data set. As EPA provides the public access to this data, it will focus on the next phase: screening of the hazards and risks posed by HPV chemicals. The Agency will then identify and set priorities for further assessment requirements, and it will determine the need for and begin taking action to reduce the risks identified. To support these efforts, we will draw on data already obtained through the TSCA Inventory Update Rule, particularly on new exposure-related data to be provided beginning in 2005.

EPA is also working to complete detailed risk assessments of 20 chemicals to which children may be disproportionately exposed. The Voluntary Children's Chemical Evaluation Program employs a new strategy under which companies' assessments are submitted to an outside peer consultation panel composed of national experts in chemical risk assessment. EPA will also continue to identify and reduce the risks associated with other chemicals and classes of chemicals already in commerce. This effort will be similar to the Agency's 2000 work with the 3M Company to withdraw from the marketplace most uses of perfluoroalkyl sulfonate (PFOS), a PBT, and the corresponding TSCA Significant New Use Rules, issued in 2002 to address and limit future uses of PFOS and chemicals like it.

By 2008, the broader risk screening and data assessment to be conducted under the HPV Challenge Program and TSCA Inventory Update Rule, the stronger focus on children's health, and EPA's ongoing chemical and chemical-class-specific work will provide a much better knowledge base from which to assess and reduce chemical risks. The chemical risk information developed under this

Goal is critical to EPA's success in achieving its other Goals, as it will provide the basis for virtually all chemical risk assessments that support EPA's air, water, and waste programs. The Agency will work to increase the availability of useful health and environmental information to our partners, stakeholders, and the public. We will continue to implement the Toxics Release Inventory (TRI) Program to provide information on releases of toxic chemicals to the environment, and we will combine such data with U.S. Census and other data through the Risk Screening Environmental Indicators model to measure our progress in reducing the relative risks associated with toxic chemical releases.

Targeted Efforts

In certain instances, risk-reduction efforts are targeted on a chemical-specific basis. Foremost among these is the federal government's commitment to eliminate the incidence of childhood lead poisoning. Since 1973, we have made considerable progress in reducing environmental lead levels by phasing out leaded gasoline in the United States, banning the production and sale of lead-based paint for residential use, adopting stringent standards for lead in drinking water, and terminating the use of lead in solder to seal food cans. Since the 1990's, EPA has primarily focused on reducing children's exposure to lead in paint and dust by developing and implementing a regulatory framework to improve work practices associated with lead-based paint and by educating parents and the medical community about the effects of lead poisoning and steps that can be taken to prevent it.

As a result of these efforts, in the United States, children's blood lead levels have declined nearly 90 percent since the mid-1970s, and the incidence of childhood lead poisoning has declined from 900,000 cases in the early 1990's to approximately 400,000 cases in 1999-2000. However, any number of children afflicted by this preventable condition is too high a number. Eliminating elevated-blood-lead levels in the "hot spot" pockets where it remains will prove increasingly challenging. EPA will collaborate with industry on a campaign to increase lead-safe work practices in home renovation and remodeling and to improve handling of lead paint on buildings and structures such as bridges through market-based incentives and other innovative approaches.

On the international front, EPA is working to eliminate the use of leaded gasoline and has succeeded in reducing use from 1993 to1997 by two thirds, from 249 million metric tons to 166 million metric tons. One factor that contributed to this success was the hands-on, results-oriented approach to the problem that will also be a hallmark of our efforts to eliminate the use of leaded gasoline globally by 2010. EPA has formed partnerships with international and regional groups such as the World Bank, the World Health Organization, the Asian Development Bank, the National Safety Council, the Alliance to End Childhood Lead Poisoning and has leveraged resources from other U.S. government agencies, including the U.S. Agency for International Development, the U.S. Department of State, and the Centers for Disease Control, to develop and implement on-the-ground technical assistance projects in several parts of the world. One example is the development of the Implementer's Guide to Lead Phase

Out, which outlines fundamental policy, technical, and operational elements: from managing the transition to unleaded gasoline, to determining the effect of oxygenates and the impact of phase-out on vehicle fleet, to developing a list of priority actions.

Other specific chemicals and classes of chemicals also warrant special emphasis. Reducing risks associated with PBT chemicals is emerging as one of EPA's highest priorities and will be a primary focus though 2008. The Agency is employing a multimedia, cross-Agency strategy to focus on the highest risk chemicals, including preventing the entrance into commerce of new PBTs and development and implementation of Agency-wide action plans to reduce risks of chemicals currently or previously used. By 2008, the Agency expects to make much progress toward reducing risks related to mercury. New information to be developed through the Dioxin Reassessment will support strategies for reducing exposure to this most ubiquitous and risky class of chemicals, and recommendations to be provided to EPA in 2003 and 2004 from a panel of national experts on asbestos will assist the Agency in designing strategies to address asbestos risks. Successful pilots initiated in 2002 and 2003 to encourage companies to retire from service large capacitors and transformers containing polychlorinated biphenyls (PCBs) will be expanded to meet aggressive new targets for the safe disposal of these commodities by 2008. The Agency is assessing the need to shift human and financial resources to address these emerging and continuing environmental challenges.

Long-range and transboundary atmospheric transport and deposition of persistent organic pollutants (POPs) and other PBTs, such as mercury, are a continuing threat to human health and the ecosystems in North America. These pollutants may be transported and released far from their sources, enter the ecosystem, and bioaccumulate through the food chain. EPA believes that in order to meet our domestic goals for risk reduction from these pollutants, it is important to address international sources. Through cooperation with appropriate domestic and international partners and the provision of technical assistance and capacity building, EPA will reduce from key source countries POPs and mercury releases, which are most likely to impact the United States via long-range environmental transport.

Chemical Emergency Prevention and Preparedness

In order to reduce or eliminate the risks associated with chemical releases, EPA must first identify and understand potential chemical risks and releases. During 2003 and 2004, EPA will review and analyze data it has already collected as well as the information it will receive under the Agency's Risk Management Plan (RMP) program. This analysis will provide EPA with information on the geographic locations and facility types with the greatest potential for chemical accidents and releases. Additionally, EPA will identify areas where susceptible and sensitive populations may be at higher risk from chemical releases. EPA will also use information generated by other Agency efforts, such as the Emergency Planning and Community Right to Know Act and Spill Prevention Control and

Countermeasure program, to supplement data on potential chemical risk and develop voluntary initiatives and activities aimed at high-risk facilities and/or geographic areas.

The majority of this work will be accomplished through our partnerships. EPA will work with communities to provide chemical risk information on local facilities. The Agency will also assist states and local communities in understanding how these chemical risks could affect them and how to reduce those risks and prepare to address and mitigate risks should a chemical release occur.

Objective 4.2: Community Health. Sustain, cleanup, and restore communities and the ecological systems that support them.

Sub-objective 4.2.1: Sustain Community Health. By 2008, 220 communities, working with EPA through meaningful public involvement, will adopt and begin implementing comprehensive, integrated planning and environmental management processes to pursue ecologically compatible development, sustain local ecosystem function, and support more livable communities.

Sub-objective 4.2.2: Restore Community Health. By 2008, increase by 50 percent the number of communities, working with EPA through meaningful public involvement, that have addressed disproportionate environmental impacts and risks through comprehensive, integrated planning and environmental management processes that pursue ecologically compatible development, sustain local ecosystem function, and support more livable communities. [2002 baseline]

Sub-objective 4.2.3: Brownfields. Through 2008, EPA will facilitate the assessment, cleanup, and redevelopment of brownfield properties which will generate $10.2 billion and create 33,700 jobs.

Sub-objective 4.2.4: US-Mexico Border. In the US-Mexico Border Region, sustain and restore community health, and preserve the ecological systems that support them.

Strategic Targets:

- By 2012, assess significant shared and transboundary surface waters and achieve a majority of water quality standards currently being exceeded in those waters. [Baseline: segments in both Mexico and US with significant transboundary and shared waters, standards being exceeded in 2003.]

- By 2005, increase by 1.5 million the number of people connected to potable water and wastewater collection and treatment systems. (Baseline: 0 additional people connected to water and wastewater systems, beginning in 1999).

Means and Strategies to Achieve Objective 2

People often connect most closely to the environment where they live—in their communities, where they experience first-hand the benefits of safe drinking water, clean air, and healthy lakes, streams, and rivers that are safe for swimming and fishing. Decisions are made every day at the local level that affect air and water quality, habitat and biodiversity, and land use. For example, transportation and land use planning, water supply and treatment, and waste management are all primarily local activities, and decisions made by communities can either systematically advance clean air, clean and safe water, and restored and preserved land or can incrementally chip away at these goals. Healthy, sustainable communities are the pieces that combine to reveal a healthy, sustainable country. For this reason, EPA is committed to sustaining and restoring the health of communities and the ecological systems that support them.

EPA will work in partnership with states and tribes, local governments, community groups, and other stakeholders to protect and sustain healthy communities and local natural resources. The Agency will also work to restore the health of communities that are vulnerable to environmental impacts, by addressing environmental justice issues and cleaning up and redeveloping Brownfield sites, for example, and to develop stronger partnerships in communities, such as those along the U.S.-Mexico Border, that can potentially impact neighboring jurisdictions.

Sustaining Healthy Communities

One of the most important strategies for achieving healthy communities and ecosystems is protecting and sustaining natural resources that are at risk. Many of the greatest threats—polluted runoff, mobile source air pollution, sprawling development and the corresponding loss of valuable forest and farmland—can best be addressed at the community level through partnership-based approaches. Partnerships promote a comprehensive, integrated approach to identifying risks and developing long-term solutions compatible with a community's economic, social, and cultural goals. EPA will facilitate community-based protection of local natural resources by:

- Supporting information networks and developing and distributing resource materials, data, and information that inform growth management and community environmental decision making;

- Helping build state, tribal, local agency, and community capabilities to address environmental challenges more effectively and better manage local natural resources;

- Facilitating innovative local, partnership-based environmental management through direct assistance to communities; and

- Coordinating and integrating various environmental programs, standards, and policies within EPA and in partnership with other agencies and standard-setting organizations to support comprehensive approaches to local natural resource management and better planning for growth.

EPA recognizes its important role in supporting local resource protection by serving as a source for information about new community assessment and planning tools, the latest research, and examples of what other communities are doing to address similar issues. EPA will continue to improve its vehicles for information exchange, such as the Smart Growth Network and affiliated web site. EPA also is committed to providing access to environmental data and information at the community level to better inform local decision making.

Community health and local resource protection depend on community-driven processes and actions. By developing and distributing tools that integrate media-specific information; supporting multimedia planning (such as the Smart Growth Index and Smart Growth Water); and developing training for local agencies and community groups on how to use data, information, and tools effectively in environmental assessment and planning and how to work collaboratively and cooperatively with a range of stakeholders, the Agency will strive to build local capacity through states, local agencies, and community groups. EPA will continue to identify and provide opportunities for public participation in environmental decision making.

The Agency recognizes that real-world, on-the-ground successes often galvanize neighboring communities into adopting integrated, comprehensive approaches to environmental management. EPA will continue to facilitate local successes by providing direct assistance to communities in the form of technical and financial assistance and by helping communities coordinate processes and develop strategic partnerships.

Finally, EPA will work to ensure that national policies and programs support rather than hinder comprehensive, integrated local resource management. EPA is committed to improved coordination and integration of its media-specific programs and policies. To this end, EPA will review new policies and regulations to ensure that programs are compatible and promote overall environmental improvements, rather than resulting in trade-offs across environmental media. The Agency will look for opportunities to integrate existing programs to optimize their impacts and make them more compatible with local processes. In addition, EPA will partner with other federal agencies and national standard-setting organizations to establish policies and standards that create incentives for and remove barriers to

smart growth and integrated environmental management.

Environmental Justice and Sensitive Communities

"Environmental justice" is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Under EPA's environmental justice program created in 1994, the Office of Environmental Justice works to integrate environmental justice into all aspects of the Agency's programs, policies, and activities and to promote constructive engagement and collaborative problem-solving among all stakeholders, especially in those communities that have been disproportionately exposed to environmental harms and risks.

EPA will continue to manage the Environmental Justice Community Small Grants program, which provides seed money to assist community-based organizations that are working to develop solutions to local environmental issues. The small grants provide grassroots groups, churches, and other nonprofit organizations with expanded opportunities for citizen involvement and tools they can use to learn more about exposure to environmental harms and risks and, consequently, protect their families and their communities.

The National Environmental Justice Advisory Council (NEJAC) was created specifically to provide an Agency forum for communities disproportionately impacted by hazardous risks. NEJAC's six subcommittees (Air/Water, Enforcement, Health/Research, Indigenous People, International, and Waste/Facility Siting) will continue to conduct public meetings to address the implications of multiple sources of environmental degradation on the health of communities and to develop recommendations for the Agency.

EPA will also continue to chair the Interagency Working Group on Environmental Justice (IWG), comprising 11 Departments and Agencies as well as White House offices, to ensure that environmental justice is incorporated into all federal programs. The IWG will collaborate with all levels of government and with the private sector to address the environmental, health, economic, and social challenges facing our communities. The IWG's 2000 Action Agenda will include 15 new demonstration and revitalization projects added in 2003, with additional projects expected every few years thereafter. These projects will focus attention on diverse urban and rural communities across the Nation. The Agenda is growing and will continue to select projects to achieve a variety of goals—from environmental cleanup, brownfields and economic development, and children's health to community education and capacity building.

Training is essential to foster the integration of environmental justice into federal programs, policies, and activities. In 2002, EPA developed a Fundamentals Workshop on Environmental Justice

to aid in training Agency employees and external stakeholders. By 2005, the Agency will add modules that promote consideration of environmental justice issues in permitting under the Resource Conservation and Recovery Act (RCRA), the Clean Water Act, and the Clean Air Act. Regions that issue permits will hold at least one training session each year for EPA permit writers and external stakeholders involved in the permitting process.

EPA has undertaken another training initiative over the last several years to encourage the use of alternative dispute resolution by community stakeholders. The Agency believes that this approach can help reduce time and resources accompanying litigation and result in more efficient, favorable decisions for all parties involved. EPA will expand a 2002 pilot that exposed community stakeholders to alternative dispute resolution through training and multi-stakeholder partnering to increase Agency and community capacity to resolve disputes through this type of negotiation.

Brownfields

EPA's Brownfields Program will continue to facilitate the cleanup, redevelopment and restoration of brownfield properties. Under the brownfields law, brownfields are defined (with certain exclusions) as real properties, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Brownfield properties include, for example, abandoned industrial sites, drug labs, mine-scarred land, or sites contaminated with petroleum or petroleum products. Through its Brownfields Program, EPA will continue to provide for the assessment and cleanup of these properties, to leverage redevelopment opportunities, and to help preserve green space, offering combined benefits to local communities.

The Small Business Liability Relief and Brownfields Revitalization Act was signed into law in 2002, expanding federal financial assistance for brownfield revitalization by providing grants for assessment, cleanup, and job training. The law also limits the liability of certain contiguous property owners and prospective purchasers of brownfield properties and clarifies innocent landowner defenses to encourage revitalization and reuse of brownfield sites. In addition, the law provides for the establishment and enhancement of state and tribal response programs, which play a critical role in the successful cleanup and revitalization of brownfields.

As authorized under the brownfields law, EPA will continue to provide assessment, cleanup, revolving loan fund, and job training grants to communities. Brownfield assessment grants provide funding to inventory, characterize, assess, and conduct planning and community involvement activities related to brownfield sites. Brownfield revolving loan fund grants provide funding for a grantee to capitalize a revolving loan and make sub-grants to carry out cleanup activities at brownfield sites. Cleanup grants, newly authorized by the Brownfields Law, will fund cleanup activities at brownfield sites owned by grant recipients. EPA will also provide funding to create local environmental job

training programs to ensure that the economic benefits derived from brownfield revitalization efforts remain in the community.

EPA will continue to work in partnership with state cleanup programs to address brownfield properties. The Agency will provide states and tribes with tools, information, and funding they can use to develop response programs that will address environmental assessment cleanup, characterization, and redevelopment needs at sites contaminated with hazardous wastes and petroleum. The Agency will continue to encourage the empowerment of state, tribal, and local environmental and economic development officials to oversee brownfield activities and the implementation of local solutions to local problems.

EPA will also work to remove uncertainties often associated with brownfield cleanups. For example, EPA will fund the Brownfields Technology Support Center to assist grant recipients in understanding and evaluating technology options for environmental assessment and clean up. EPA will also work across its various programs and with other federal and state partners to foster innovative, integrated approaches to brownfield cleanups and redevelopment by sponsoring joint initiatives. For example, the RCRA Brownfields Prevention Initiative encourages clean up and revitalization of RCRA sites.

Mexico Border

EPA is working along the Mexican Border to reduce transboundary threats to human and ecosystem health in North America. The U.S.-Mexico Border 2012 Program, a joint effort between the U.S. and Mexican governments, will work with the 10 border states and with local communities to improve the region's environmental health.

Four regional workgroups, co-chaired by EPA and state officials, six border-wide workgroups, and three Policy Forums will collaborate with local communities to set priorities and plan and implement projects. These groups will also assist in establishing objectives, defining indicators, and measuring progress. The allocation of resources to activities will be based on the degree to which each project achieves the goals and objectives outlined in the Border 2012 Plan.

One focus of Border 2012 will be improved water quality in the region. Because of inadequate water and sewage treatment, border residents suffer disproportionately from hepatitis A and other water-borne diseases. By increasing the number of connections to potable water systems, EPA and its partners will reduce health risks to residents who may currently lack access to safe drinking water. Similarly, by increasing the number of homes with access to basic sanitation, EPA and its partners will reduce the discharge of untreated domestic wastewater into surface and ground water. Our planned assessment of shared and transboundary surface waters will facilitate the collection, management, and

exchange of environmental data essential for effective water management.

In addition to water issues, EPA will focus on the environmental and human health risks from pesticides. By training migrant farm workers and others who routinely handle pesticides, we will reduce both the long-term chronic health effects of pesticide exposure as well as the incidence of acute pesticide poisoning.

Objective 4.3: Ecosystems. Protect, sustain, and restore the health of natural habitats and ecosystems.

Sub-objective 4.3.1: Ecosystem Scale Protection and Restoration. Facilitate the ecosystem scale protection and restoration of natural areas.

Strategic Targets:

- By 2008, improve the overall aquatic system health of the 28 estuaries that are part of the National Estuary Program (NEP), as measured using the National Coastal Condition Report indicators

- By 2008, protect or restore an additional 250,000 acres of habitat within the study areas for the 28 estuaries that are part of the National Estuary Program (NEP). (2002 Baseline: 0 acres of habitat restored)

Sub-objective 4.3.2: Wetlands. By 2008, working with partners, achieve a net increase of 400,000 acres of wetlands. (2002 Baseline: annual net loss of an estimated 58,500 acres)

Sub-objective 4.3.3: Great Lakes. By 2008, prevent water pollution and protect aquatic systems so that overall ecosystem health of the Great Lakes is improved by at least 2 points. (2002 Baseline: Great Lakes rating of 22 on a 40 point scale where the rating uses select Great Lakes State of the Lakes Ecosystem indicators based on a 1 to 5 rating system for each indicator, where 1 is poor and 5 is good.)

Strategic Targets:

- By 2007, the average concentrations of PCBs in whole lake trout and walleye samples will decline by 25%. (2000 Baseline: concentration for Lake Superior of .9 ug/g; for Lake Huron of .8 ug/g; for Lake Michigan of 1.6 ug/g; for Lake Erie of .2 ug/g; and for Lake Ontario of 1.2 ug/g).

- By 2008, the annual concentrations of toxic chemicals in the air in the Great Lakes basin will decline by 30%. (concentration for Lake Superior of 59.8 pg/m^3; for Lake Huron of 19.0 pg/m^3; for Lake Michigan of 86.7 pg/m^3; for Lake Erie of 182.7 pg/m^3; and for Lake Ontario of 36.0 pg/m^3).

- By 2010, restore and delist a cumulative total of at least 10 Areas of Concern within the Great Lakes basin.

- By 2008, a cumulative total of at least 3.3 million cubic yards of contaminated sediment in the Great Lakes will be remediated. (2002 Baseline: 2.1 million cubic yards of contaminated sediments from the Great Lakes have been remediated from 1997 - 2001).

Sub-objective 4.3.4: Chesapeake Bay. By 2008, prevent water pollution and protect aquatic systems so that overall aquatic system health of the Chesapeake Bay is improved enough so that there are 120,000 acres of submerged aquatic vegetation (2002 baseline, 85,252 acres).

- By 2008, reduce nitrogen loads entering the Chesapeake Bay by 94 million pound per year, from 1985 levels (2002 Baseline: 51 million pounds per year reduced).

- By 2008, reduce phosphorus loads entering the Chesapeake Bay by 9.7 million pounds per year, from 1985 levels. (2002 Baseline: 8 million pounds).

- By 2008, reduce sediment loads entering the Chesapeake Bay by 1.37 million pounds per year, from 1985 levels. (2002 Baseline: 0.8 million pounds).

Sub-objective 4.3.5: Gulf of Mexico. By 2008, prevent water pollution and protect aquatic systems so that overall aquatic system health of coastal waters of the Gulf of Mexico is improved.

Strategic Target:

- By 2008, reduce releases of nutrients throughout the Mississippi River Basin to reduce the size of the hypoxic zone in the Gulf of Mexico, to not more than 10,000 km^2 as measured by the five year running average of the size of the zone. (Baseline: 1996-2000 running average size = 14,128 km2).

- By 2008, improve the overall system health of the Gulf of Mexico by 0.2 on the "good/fair/poor" scale of the National Coastal Condition Report. (2002 Baseline: Southeast rating of fair/poor or 1.9 where the rating is based on a 5-point system).

Means and Strategies to Achieve Objective 3

EPA is working to protect, sustain, and restore the health of natural habitats and ecosystems by identifying and evaluating problem areas, developing tools, and improving community capacity to address problems.

National Estuaries Program

Estuaries are among the most productive ecosystems on earth, providing numerous ecological, economic, cultural, and aesthetic benefits and services. They are also among the most threatened ecosystems, largely as a result of rapidly increasing growth and development along the Nation's coastlines. About half the U.S. population now lives in coastal areas, and coastal counties are growing three times faster than counties elsewhere in the nation. Overuse of resources and poor land use practices have resulted in unsafe drinking water, beach and shellfish bed closings, harmful algal blooms, unproductive fisheries, loss of habitat and wildlife, fish kills, and a host of other human health and natural resource problems.

EPA plans to implement key activities[1] under its flagship coastal watershed protection effort, the National Estuary Program (NEP), to help address these growing threats to the Nation's estuarine resources. The NEP, which provides inclusive, community-based planning and action at the watershed level, is an important initiative in conserving our estuarine resources.

EPA will facilitate the ecosystem-scale protection and restoration of natural areas by supporting continuing efforts of all 28 NEP estuaries to implement their Comprehensive Conservation and Management Plans (CCMPs) to protect and restore estuarine resources. In addition, the Agency will provide more focused support for several priority needs identified by EPA and the NEP, including

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[1]The means and strategies outlined here for achieving Sub-objective 3.1 must be viewed in tandem with the means and strategies outlined under Goal 2, Objective 2, Sub-objective 2.2, "Improve Ocean and Coastal Waters." Sub-objective 2.2 contains strategic targets for EPA's vessel discharge, dredged material management, and ocean disposal programs, which are integral to the Agency's efforts to facilitating the ecosystem scale protection and restoration of natural areas. [Double check this reference once architecture is final to make sure numbers are right.]

problems of invasive species, air deposition of pollutants such as mercury and nitrogen, and nutrient over-enrichment. EPA will support NEPs in developing aquatic nuisance species monitoring protocols and rapid response plans, expanding mercury deposition monitoring, and developing and implementing nutrient management strategies.

The health of the Nation's estuarine ecosystems also depends on the maintenance of high-quality habitat. Diminished and degraded habitats are less able to support healthy populations of wildlife and marine organisms and perform the economic, environmental, and aesthetic functions on which coastal populations depend for their livelihood. EPA will facilitate ecosystem-scale protection and restoration by supporting NEP efforts to achieve its habitat restoration and protection goal of 250,000 additional acres by 2008.

Wetlands

Over the years, the United States has lost more than 115 million acres of wetlands to development, agriculture, and other purposes. Today, the Nation still loses an estimated 58,000 acres of wetlands every year.

In December 2002, the U.S. Army Corps of Engineers, in cooperation with EPA, issued a Regulatory Guidance Letter to improve wetland protections through better compensatory mitigation, and the Administration unveiled a National Wetlands Mitigation Action Plan listing 17 action items that federal agencies will undertake to improve the effectiveness of wetlands mitigation and restoration. These actions reflect the Agency's and Corps' commitment to a regulatory program aimed at no overall net loss of wetlands and to public and private, regulatory and non-regulatory initiatives and partnerships to improve the overall condition of the Nation's wetlands.

In addition to the Regulatory Guidance Letter and National Wetlands Mitigation Action Plan, the Administration's commitment to protecting and restoring America's wetlands is reflected in the conservation title of the 2002 Farm Bill, which provides an unprecedented $47 billion over the next decade. That includes funding for conservation programs that will double the number of wetlands restored and/or protected to a total of 2.275 million acres of wetlands and other aquatic resources. In December 2002, President Bush signed a bill re-authorizing the North American Wetlands Conservation Act, which extends for 5 years a program under which the federal government matches donations from sportsmen, state wildlife agencies, conservationists, and landowners who pledge to protect millions of acres of wetlands.

To meet these commitments, EPA's Wetlands Program will work to achieve national gains in wetlands acreage by implementing an innovative and partner-based wetlands and stream corridor restoration program, a broad-based and integrated monitoring and assessment program, and the Clean

Water Act Section 404 program. The Agency will assist its federal, state and tribal partners in building capacity to implement "no overall net loss" wetlands programs. EPA's support of such programs will help avoid or minimize wetland losses, and provide for full compensation for unavoidable losses of wetland functions. Wetlands and stream corridor restoration will remain a focus for regaining lost aquatic resources.

Hundreds of regional watershed projects and 5-Star Restoration and Education Projects will continue to unite local stakeholders in environmental partnerships to restore wetlands and streams at the watershed level. EPA plans to support 840 watershed-based wetland and stream restoration projects by 2008. In addition, EPA plans to support 45 watershed-based wetland and stream restoration projects in Indian country within that time.

Great Lakes

The Great Lakes are the largest system of surface freshwater on earth, containing 20 percent of the world's surface freshwater and accounting for more than 90 percent of the surface freshwater in the United States. The watershed includes two nations, eight American states, a Canadian province, more than 40 tribes and is home to more than one-tenth of the U.S. population. To further restore the chemical, physical, and biological integrity of the Great Lakes ecosystem, EPA is implementing Clean Water Act core water protection programs and has launched the Great Lakes Strategy 2002: A Plan for the New Millennium on behalf of the U.S. Policy Committee. The Strategy presents a basin-wide vision for Great Lakes protection and restoration, identifying the major environmental issues in the Great Lakes; establishing common goals for federal, state, and tribal agencies; and helping to fulfill U.S. responsibilities under the U.S.-Canada Great Lakes Water Quality Agreement. Objectives include the clean up and de-listing of at least 10 Areas of Concern by 2010, a 25 percent reduction in PCB concentrations in lake trout and walleye, and the restoration or enhancement of 100,000 acres of wetlands within the Great Lakes basin. The Strategy also sets goals for the clean up of all Areas of Concern by 2025, and for 90 percent of monitored Great Lakes beaches to be open 95 percent of the season.

The Great Lakes Strategy incorporates the Great Lakes Binational Toxics Strategy, a groundbreaking international toxics reduction effort that targets a common set of persistent, toxic substances for reduction and elimination (http://www.epa.gov/glnpo/bns/documents.html). The Toxics Strategy applies voluntary and regulatory tools focused on pollution prevention to a targeted set of substances including mercury, PCBs, dioxins/furans, and certain canceled pesticides. The Strategy outlines activities for states, industry, tribes, non-governmental organizations, and other stakeholders.

These efforts will be buttressed by the Great Lakes Legacy Act, which targets additional resources to clean up contaminated sediments at Great Lakes Areas of Concern. Sediment

contamination is a significant source of Great Lakes toxic pollutants and can impact human health via the bio-accumulation of toxic substances through the food chain.

Chesapeake Bay

The Chesapeake Bay Program is a unique regional partnership formed to direct and conduct restoration of the Chesapeake Bay. Bay Program partners include Maryland, Virginia and Pennsylvania; the District of Columbia; the Chesapeake Bay Commission, a tri-state legislative body; EPA, which represents the federal government; and participating citizen advisory groups. On June 28, 2000, the partners signed a comprehensive and far-reaching agreement that will guide their restoration and protection efforts through 2010. That agreement, Chesapeake 2000, focuses on improving water quality as the most critical element in the overall protection and restoration of the Bay and its tributaries.

One of the key measures of success in achieving improved Bay water quality will be the restoration of submerged aquatic vegetation (SAV). SAV is one of the most important biological communities in the Bay, producing oxygen, nourishing a variety of animals, providing shelter and nursery areas for fish and shellfish, reducing wave action and shoreline erosion, absorbing nutrients such as phosphorus and nitrogen, and trapping sediments. While recent improvements in water quality have contributed to a resurgence in SAV (from a low of 38,000 acres in 1984 to more than 85,000 acres today), more improvements are needed.

To achieve improved water quality and restore SAV, Bay Program partners have committed to reducing nutrient and sediment pollution loads sufficiently to remove the Bay and the tidal portions of its tributaries from the list of impaired waters. Key elements of state strategies to achieve these reductions include implementing advanced treatment of wastewater to reduce nutrient discharges and the restoration and protection of riparian forests that serve as a buffer against sediment and nutrient pollution that enters waterways from the land.

EPA's Chesapeake Bay Program Office (CBPO) has identified a number of actions that will contribute to achievement of the Sub-objective and strategic targets. For example, EPA will work with the Bay Program's Implementation Committee to develop a SAV strategy and water quality criteria for protecting SAV; collaborate with the U.S. Forest Service to ensure that effective strategies are put in place to conserve existing forest buffers; and ensure that states are implementing existing tributary strategies and are on schedule to implement new water quality standards/allocations regarding installation of biological nutrient removal at wastewater treatment facilities.

Gulf of Mexico

The Gulf of Mexico Program represents a broad, multi-organizational partnership based on the

participation of business and industry, agriculture, local government, citizens, environmental and fishery interests, federal agencies, and five Gulf states. The Gulf Program is designed to assist the Gulf states and stakeholders in developing a regional, ecosystem, and watershed-based framework for restoring and protecting the Gulf of Mexico in ways consistent with the economic well-being of the region. Gulf Program partners voluntarily identify key environmental problems and work at the regional, state, and local level to define and recommend solutions.

Gulf of Mexico issues can be broadly categorized as affecting water quality, public health, and habitat loss. The Gulf Program has adopted a 7-step strategy for assessing the work to be accomplished and focusing technical and financial resources on specific actions. These steps include (1) identifying priority issues to be addressed, (2) identifying coastal areas where technical and financial assistance should be focused, (3) identifying coastal watersheds and water-body segments requiring water quality and habitat restoration, (4) establishing annual performance goals, (5) developing the partnership agreements and commitments needed to implement the Program, (6) conducting implementation activities, and (7) tracking progress and evaluating outcomes against project goals.

The first step in restoring and protecting the biological integrity of the waters and important habitats of the Gulf of Mexico is to restore the full aquatic life and recreational uses (including safe consumption of seafood) of high-priority coastal watersheds and estuaries, including the watersheds of the Mississippi River Basin. Continued implementation of EPA's core Clean Water Act water protection programs[2] and efforts to address the hypoxic zone will help to restore the waters of the Gulf of Mexico and its tributaries. In addition, a continued focus on protecting and restoring aquatic life and recreational uses ensures that local communities directly benefit from an improved quality of life and that the Gulf as a whole ultimately benefits from the cumulation of community efforts. These local efforts will take place within a context of increased regional understanding of the Gulf as an ecological system, and they will benefit from improved capabilities to assess, evaluate, manage, and communicate progress from a holistic, systems perspective.

Objective 4.4: Homeland Security. Enhance the Nation's capability to prevent, detect, protect, and recover from acts of terror.

> **Sub-objective 4.4.1: Detection, Containment, and Decontamination of Biological and Chemical Agents.** Conduct leading-edge research to develop enhanced methods for detection, containment, and decontamination of biological and chemical agents intentionally introduced into buildings and drinking water systems and wastewater systems, and methods for safe disposal of waste materials resulting from cleanups. Develop methods for conducting rapid

[2]EPA's water quality protection programs are discussed under Goal 2: Clean and Safe Water.

assessments of risks to emergency response personnel and the public from potential homeland security threats.

Sub-objective 4.4.2: Chemical and Oil Facilities. By 2008, EPA, working with States, tribes, and other partners, will enhance the security in the chemical and oil industry. XX facilities will have conducted vulnerability assessments and YY implemented security measures to reduce vulnerabilities and thereby protect communities and the environment from chemical releases.

Sub-objective 4.4.3: Data. Through 2008, EPA will enhance consistency in data collection and facilitate data-sharing to assist its efforts to collaborate on the prevention, detection, and response to incidents.

Strategic Targets:

- By 2005, EPA's National Radiation Monitoring System will cover 37% of the U.S. population. This percentage will increase to approximately 70% by 2006.
- By 2005, EPA will have enhanced ability to collect ambient air monitoring data and make data available to other Federal agencies.
- By 2005, EPA will demonstrate annually the ability to deploy emergency air monitoring capability, which is necessary to ensure the safety of responders and the public, to an incident within 12 hours of notification..

Sub-objective 4.4.4: Infrastructure. Through 2008, safeguard public health and safety by providing technical support to drinking water and wastewater utilities, the chemical industry, and those parties responsible for the quality of indoor air.

Means and Strategies to Achieve Objective 4

Recent events have illustrated the need for the federal government to prepare for and protect the public against the threats posed by terrorism. As a key agency charged with crisis and consequence management responsibilities under various federal preparedness and response plans, EPA must be ready to help detect, prevent, protect against, respond to, and recover from acts of terror. Under this Objective, EPA will survey the private sector, universities, federal agencies, and others to assess existing capabilities. We will provide those who need them with technologies, information, and instructions, and we will conduct research to fill gaps where technology and science are lacking.

The Agency remains fully committed to homeland security and will take a proactive approach in preparing for potential or emerging terrorist threats. EPA recognizes that potential threats can be biological agents, such as anthrax or smallpox. The Agency has the unique expertise as well as the statutory responsibility to determine which pesticides are effective and can be used against these threats. EPA will continue to identify and evaluate biological agents which may become weapons used by terrorists against the United States and has begun to conduct scientific assessments and develop test protocols to determine the efficacy and safety of products that can be used against potential biological threats. At the same time, EPA will develop detection and decontamination processes for potential threats. To provide added protection, the Agency will work to educate its partners and the public about these pesticides, strengthen the certification and training program, and improve storage and disposal procedures.

To support Homeland Security, EPA conducts research in three main areas: building decontamination, water security, and rapid risk assessment. Research on decontamination of buildings will focus on methods and technologies for (1) prevention, detection, and containment of biological and chemical agents intentionally introduced into large buildings or structures; (2) decontamination of building surfaces, furnishings, and equipment; and (3) safe disposal of residual materials. This work will result in more efficient and effective cleanup of contaminated buildings, as well as more effective prevention measures. In the area of water security, research will include the development, testing, and communication/implementation of enhanced methods for prevention, detection, treatment, and containment of biological and chemical warfare agents and bulk industrial chemicals intentionally introduced into drinking water and wastewater systems. This research will ensure that appropriate parties are properly equipped with the tools they need to protect or treat water systems in the event of contamination. Rapid risk assessment research will focus on developing practices and procedures that provide elected officials, decision makers, the public, and first responders with rapid risk assessment protocols for chemical and biological threats. For more efficient emergency response, EPA will also inventory the Agency's, the federal government's, and the private sector's expertise in order to provide quick access to nationally recognized, highly specialized experts in Homeland Security areas, such as biology, chemistry, exposure assessments, detection/treatment technologies. EPA will also provide guidance, technical expertise and support to federal, state and local governments, and other institutions on preventing building contamination (chemical and biological), treatment and clean-up activities, water security, and rapid risk assessment.

While EPA has programs in place to address chemical risks from accidental releases (as discussed Objective 1), on September 11, 2001, we learned that human health, communities, and ecosystems can also be threatened by deliberate acts. Therefore, we are developing and implementing programs to enhance security at chemical and oil facilities. As a first step, EPA is working with the Office of Homeland Security, other federal agencies, and industry to determine the kinds of vulnerability assessments of chemical facilities to be conducted and security measures to be implemented at various

types of chemical and oil facilities. EPA will then develop an implementation plan to ensure that these assessments and measures are put into place over the next several years.

Another aspect of preparedness is protection of first responders or other on-site personnel. Many chemicals that pose a potential threat emit toxic fumes, are toxic when in contact with skin, or present other direct effects. Acute Exposure Guideline Levels (AEGLs) are short-term exposure limits, representing three tiers of health effect endpoints (discomfort, disability, and death) for five different exposure durations. To increase the Nation's preparedness, EPA, in collaboration with other federal, private, and academic organizations, is increasing the pace for development of AEGLs and providing key information to emergency personnel so they take necessary precautions and treat citizens who may be on the scene.

EPA is the federal organization responsible for ensuring the safety of critical water infrastructure in the event of terrorist or other intentional acts. Currently, there are approximately 54,000 community drinking water systems and almost 16,000 wastewater utilities nationwide, serving approximately 264 million people. EPA's principal goal related to critical water infrastructure is to work with states, tribes, drinking water and wastewater utilities, public health and environmental organizations, and other stakeholders to enhance the security of these water utilities. Critical water infrastructure protection has taken on an even greater urgency since the terrorist attacks of September 11, 2001. The Agency initiated technical support and financial assistance activities to help drinking water and wastewater utilities assess their vulnerability to terrorist or other intentional acts and develop or revise their emergency response plans. For drinking water systems, these efforts were reinforced through the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (Bioterrorism Act of 2002), which required community water systems supplying water to more than 3,300 people (of which there are about 9,000 nationwide) to conduct vulnerability assessments and prepare emergency response plans by certain dates. The last of these deadlines is December 31, 2004. While not subject to the Bioterrorism Act of 2002, wastewater systems have also been conducting the full range of activities related to vulnerability assessments and emergency response plans. EPA and the water infrastructure community agree that these protective activities are not "one time only" endeavors, but represent an iterative process based on new and emerging information, science, and technology. Thus, EPA, in collaboration with its stakeholders, will continue to provide the full menu of technical assistance and training approaches to ensure that systems are identifying their vulnerabilities and developing robust emergency response plans. Contingency Plans for the 14 U.S.-Mexico Sister Cities will also significantly enhance the effectiveness of municipal authorities to cooperate in responding to potentially disastrous incidents. Scientific and technical analyses, especially on methods and technologies, will improve the overall capacity to protect drinking water and wastewater utilities. The Agency will spearhead and support efforts to develop effective and affordable methods, technologies, equipment, and other tools needed to protect drinking water and wastewater systems from attack.

Ensuring that critical information reaches the right people by the fastest means necessary is another facet of maintaining a secure infrastructure. For drinking water facilities, the Agency will also continue to support the operation of a secure, web-based, password-protected Information Sharing and Analysis Center that provides data on threats of attacks or actual alerts and notices to drinking water and wastewater utilities. This Center, required by Presidential Decision Directive 63 of 1998, was developed by the Association of Metropolitan Water Agencies in partnership with the Federal Bureau of Investigation and is a critical component of water infrastructure protection activities.

EPA's primary effort to enhance collection and sharing of environmental data and information is the development of the National Environmental Information Exchange Network (Exchange Network). The Exchange Network is a collaborative effort by EPA, states, and tribes to exchange data among all partnering entities via the Internet. The exchange points on this Network are called "nodes." EPA's node is the Central Data Exchange (CDX), a facility that has been established to handle electronic data transfers as well as non-electronic submissions such as paper forms and diskettes. Working in partnership with states and tribes, EPA has identified and set priorities for the information systems that will be supported by these electronic exchanges; as of early 2003, five such systems are being supported by the CDX facility and the technical design work is underway for seven additional systems.

Other component activities are being pursued to support the Exchange Network that also contribute heavily to data consistency and integration capability. The Facility Registry System (FRS) is a database of facility records drawn from EPA and state program systems. In addition to housing the facility information in one registry system, the FRS supports Homeland Security efforts because it is linked to the programmatic data and information associated with each facility. FRS users can generate reports which provide all of the location data, environmental interest data, and other attributes for a facility that are contained in the contributing information systems.

Another activity that supports data consistency is EPA's data standards program. Again working in collaboration with states and tribes, EPA supports the Environmental Data Standards Council (EDSC), a body formed in 1999 to develop and support the use of data standards. The EDSC has approved 11 data standards and is working on 3 additional data standards. When implemented in information systems, these data standards enhance consistency in terminology, enable data integration, and improve data quality. Finally, the Environmental Data Registry (EDR) provides access to a wide range of information about the availability, definition, and use of information systems maintained by EPA; the EDR also contains a catalog of the data elements in these systems. System developers use the EDR as a reference tool to enhance data consistency and integration.

One of the problems that EPA identified in responding to the events of September 11 and its aftermath concerned the availability of personnel, equipment, and infrastructure for air monitoring and analysis. While a number of existing ambient air monitors were already located in the

Manhattan/Brooklyn area, the Agency was still hard pressed to make hand-held and movable monitors available for transport to the site. We have identified a need for rapid deployment capability with air monitoring expertise and equipment to address incidents that may occur in the future at multiple sites or sites removed from regional centers. We also lacked state-of-the-art analytical and communications equipment to provide health effects analysis and advisories in the timeliest manner. In addition, the Agency lacked emergency response training for air monitoring personnel.

To address these issues, EPA has established a strategic objective to ensure that critical environmental threat monitoring information and technologies are available to the private sector, other federal agencies, and state and local governments to assist in threat-detection and response. Specifically, EPA will work with states, tribes, and other federal agencies to use the current and new air monitoring infrastructure to assist in detecting potential threats in the ambient air. In conjunction with states and tribes, EPA operates a system of air monitors for compliance, trend, and characterization purposes. We will work cooperatively with the Department of Homeland Security and other agencies to ensure the ambient air monitoring system is available and capable of providing nearly real-time information to aid in detecting threatening substances in the ambient air. The Agency will also develop and operate rapid response laboratories to monitor and analyze the air where there is a suspected or known release of chemical, biological, or radiological agents into the outdoor air.

EPA's National Monitoring System is the only nationwide environmental radiation monitoring program that provides information about the wide-scale spread of radioactive material from nuclear or radiological incidents. Data from the National Monitoring System is necessary to provide timely information for making protective-action decisions in the event of a major nuclear or radiological incident. This data will allow increased preparedness for and response to terrorist threats and other incidents. The expanded and upgraded National Monitoring System will increase reliability and population coverage and include component that can be deployed to impacted areas immediately after notification.

Objective 4.5: Science/Research. Through 2008, provide and apply a sound scientific foundation to EPA's goal of protecting, sustaining and restoring the health of people, communities, and ecosystems by conducting leading-edge research and developing a better understanding and characterization of environmental outcomes under Goal 4.

Sub-objective 4.5.1: Science. Through 2008, identify and synthesize the best available scientific information, models, methods and analyses to support Agency guidance and policy decisions related to the health of people, communities, and ecosystems.

Sub-objective 4.5.2: Research. Through 2008, conduct research that contributes to the

overall health of humans, their communities, and ecosystems. Research in this goal is a combination of problem-driven and core programs, and will focus on pesticides and toxics, global climate change, and comprehensive, cross-cutting research on the health of humans, their communities, and ecosystems.

Means and Strategies to Achieve Objective 5

Science

EPA's goal of protecting, sustaining, and restoring the health of people, communities, and ecosystems requires a committed and coordinated effort among multiple programs offices. This effort brings together expertise and resources from across the Agency and cultivates relationships with our external partners and stakeholders. To meet this goal, EPA must utilize the best available science and apply its findings effectively to assist Agency decision-making and to meet a broad range of program needs.

Environmental Indicators

Environmental indicators are an important tool for simplifying, analyzing, and communicating information about environmental conditions and human health. EPA will continue to implement the Environmental Indicators Initiative to establish a set of performance indicators that measure environmental status. For environmental indicators to be as important as are economic indicators in signaling change, they must be scientifically valid for answering environmental questions from many perspectives. In general, questions about the environment from local, state, regional, or national perspectives differ and may not be answerable by one environmental indicator. As noted in the 2003 draft *Report on the Environment*, great care must be taken when selecting environmental indicators. By 2008, EPA's scientifically valid environmental indicators will capture the essence of key national, regional, and state perspectives on environmental questions and provide indicator-based signals of progress for comparison with EPA's five goals.

Emergency Management

The Agency will implement a suite of customized Situational Analysis tools for emergency management. These tools will deliver secure, reliable, and timely data access and communications to on-scene coordinators, emergency response teams, and investigators from field locations.

Geospatial Tools and Public Access

EPA will develop new geo-spatial tools and information that will allow the Agency and its

partners to assess ecosystem conditions holistically. This approach will indicate where environmental stressors may be located and enable EPA and its partners to develop more comprehensive natural resource and environmental programs to improve ecosystem health. The Agency will build on the foundation of existing public access tools such as *Envirofacts* and *Window to My Environment* (a geographic portal to community-based environmental information) by providing additional access to information collected by EPA, its partners, and stakeholders.

EPA's regional offices will continue to improve their ability to identify baseline community and ecosystem health conditions in priority geographic areas. The Agency will use the Environmental Monitoring and Assessment Program (EMAP) and the Regional Environmental Monitoring and Assessment Program (REMAP) to assess the status and trends of ecosystem health. Additionally, EMAP, REMAP, and local monitoring activities will facilitate development of community and ecosystem indicators to monitor the success of EPA program implementation.

EPA will continue to assure that high-quality environmental data is used to make sound environmental decisions by conducting laboratory evaluations and investigations, data validations, quality assurance management and project plan reviews, and Geographic Information System (GIS) analyses and by managing regional quality assurance programs and analytical services/support contracts. State and tribal organizations that receive funds from EPA will provide a quality management plan for EPA review and approval. EPA regional offices will continue to provide environmental monitoring and technical assistance to federal, state, tribal, and local agencies to assist them in evaluating and addressing problem facilities and priority geographic areas.

Regional Laboratories

Through its regional offices, EPA will participate in the National Environmental Laboratory Accreditation Conference (NELAC), an association of state and federal agencies and private organizations formed to establish and promote mutually acceptable performance standards for the inspection and operation of environmental laboratories. We will support implementation of the NELAC standards to ensure that decisions are made from a sound technical, scientific, and statistical basis and that laboratories deliver quality data. EPA will also update its own outdated laboratory equipment to increase its investigative, monitoring, and analytical capabilities.

Research

Research carried out under this goal is designed to enable EPA to meet its regulatory and policy objectives by providing both problem-driven and core research results. EPA's Office of Research and Development (ORD) has developed multi-year plans for research on safe food, pesticides and toxics; global climate change; ecological assessment; human health; endocrine disruptors;

and mercury. These plans lay out long-term research goals and describe targets the Agency intends to meet to reduce scientific uncertainties. Additional research is planned on computational toxicology and persistent bioaccumulative toxic pollutants.

Safe Food

The Safe Food Research Program, developed in response to the passage of FQPA, builds on earlier research to reduce scientific uncertainty in risk assessment. Research results will provide data needed to develop refined aggregate and cumulative risk assessments, to develop the appropriate safety factors to protect children and other sensitive populations, to refine risk assessments and decisions regarding pesticide safety, and to provide risk mitigation technologies to reduce risks to humans. By 2008, EPA will provide scientific tools that can be used to characterize, assess, and manage risks across the exposure-to-dose-to-effects continuum in implementing FQPA.

Safe Communities

Additional research on pesticides and toxics provides results that support FIFRA and TSCA. EPA's multi-year research plan establishes four long-term goals, designed to enhance the Agency's human health and ecological risk assessment and risk management capabilities. Over the next 5 years, EPA will:

- Advance development of predictive tools for prioritization of testing requirements and enhanced interpretation of exposure, hazard identification, and dose-response information.
- Work toward creating a scientific foundation for probabilistic risk assessment methods that protect birds, fish, and other wildlife populations.
- Work toward providing the scientific basis for EPA guidance to prevent or reduce risks of human environments within communities, homes, and workplaces.
- Advance the provision of strategic, scientific information and advice concerning novel or newly discovered hazards.

Global climate change

The Global Change Research Act of 1990 establishes the U.S. Global Change Research Program to coordinate a comprehensive research program on global change. This is an inter-Agency effort, with EPA bearing responsibility to assess the consequences of global change on human health, ecosystems, and social well-being. Research examines future global change scenarios and the influence

of climate, land use, and other factors on issues that are important to the public. Additional assessments will focus on air quality, water quality, ecosystem health, and human health. EPA's research plan for global climate change lays out five long-term goals. Within the 5- year scope of this *Strategic Plan*, EPA will:

- Make progress toward determining the regional and national implications of climate change and variability for the people, environment, and the economy of the United States in the context of other, non-climate-related (environmental, economic, and social) factors;

- Work to build the capacity to assess and respond to global change impacts on fresh water and coastal ecosystems;

- Make progress toward determining the possible impacts of global change on water quantity and quality and the consequences for aquatic ecosystems and drinking water and wastewater systems;

- Work to build the capacity to assess and respond to global change impacts on human health in the United States; and

- Advance the provision of approaches, methods, and models to quantitatively assess effects of global change on air quality and develop and apply tools to integrate global change effects across environmental media.

Ecological Assessment

EPA is focusing on strengthening our scientific basis to adequately assess and compare risks to ecosystems, to protect and restore them, and to track progress in terms of ecological outcomes. Global climate change, loss and destruction of habitat due to sprawl and exploitation of natural resources, invasive species, non-point source pollution, and the accumulation and interaction of these effects present emerging ecological problems. We will emphasize (1) monitoring ecosystem conditions that reflect the scale of the problem and need for action, the causes of harm, and the success of mitigation and restoration efforts; and (2) developing models and protocols to help diagnose the causes of ecosystem degradation and forecast future conditions. Additionally, efforts focus on developing risk assessment techniques that quantify and compare current and future ecosystem risks and developing cost-effective, stakeholder-driven restoration and protection strategies. The Agency has established four long-term goals for this effort. Within the 5-year scope of this *Strategic Plan*, EPA will:

- Advance state and tribal use of a common monitoring design and appropriate ecological indicators to determine the status and trends of ecological resources;

- Work toward ensuring that managers and researchers will understand the links between human activities, natural dynamics, ecological stressors, and ecosystem condition;

- Work toward providing environmental managers with tools to predict multi-stressor effects on ecological resources to assess vulnerability and manage for sustainability; and

- Work toward providing managers with scientifically defensible methods to protect and restore ecosystem condition.

Human Health

EPA's human health research represents the Agency's only comprehensive program to address the limitations in human health risk assessment. The measurement-derived databases, models, and protocols developed through this research program will strengthen the scientific foundation for human health risk assessment and will be used by scientists across the Agency. Research efforts include developing principles that establish how chemicals or chemical classes act and improved risk assessment methods for evaluating selected subpopulations (including exploring ways that age, genetics, and health status influence susceptibility to chemical exposures); determining the effects of preexisting disease (such as pulmonary or cardiovascular disease) to humans exposed to environmental agents; and developing the tools and methods that comprise the framework to evaluate public health. Within the 5-year scope of this *Strategic Plan*, EPA will advance toward its long-term goals of:

- Developing a commonly accepted approach for estimating the risk to human health posed by exposure to toxic chemicals in the environment. The approach will incorporate information on biological modes or mechanisms governing toxicity;

- Providing regulatory decision makers with data-based models, risk assessment approaches, and guidance across the whole of the risk paradigm for improved assessments of aggregate and cumulative exposures and risks;

- Improving the scientific foundation of human health risk assessment and risk management for susceptible subpopulations; and

- Providing the scientific understanding and tools to assist the Agency and others in evaluating the effectiveness of public health outcomes resulting from risk management actions.

Endocrine Disruptors

To support its regulatory mandates, EPA's research focuses on improving our scientific understanding of the exposures, effects, and management of endocrine disruptor chemicals and determining the extent of the impact they may have on humans, wildlife, and the environment. EPA will evaluate current and develop new standardized protocols to screen chemicals for their potential endocrine effects. The Agency has established three long-term goals for its research on endocrine disruptors. During the 5-year scope of this *Strategic Plan*, we will:

- Provide a better understanding of the science underlying the effects, exposure, assessment, and management of endocrine disruptors;

- Make progress toward determining the extent of the impact of endocrine disruptors on humans, wildlife, and the environment; and

- Advance EPA's screening and testing program.

Mercury

A 1997 *EPA Mercury Study Report to Congress* discussed the magnitude of mercury emissions in the United States and concluded that a plausible link exists between human activities that release mercury from industrial and combustion sources in the United States and methyl mercury concentrations in humans and wildlife. Regulatory mandates require EPA to address these risks. The Agency is developing risk management research for managing emissions from coal-fired utilities (critical information for rule-making) and non-combustion sources of mercury; risk management research for fate and transport of mercury to fish; regionally-based ecological assessments of the effects of methyl mercury on birds; assessment of methyl mercury in human populations; and risk communication methods and tools. EPA has established two long-term goals for mercury research and, within the 5-year scope of this *Strategic Plan*, will:

- Provide tools to reduce and prevent the release of mercury into the environment; and

- Improve understanding of the transport and fate of mercury from its release to its effects on the receptor.

Persistent, Bioaccumulative Toxic Pollutants

EPA is forging a strategic approach to identify and reduce risks to humans and the environment from current and future exposures to priority persistent bioaccumulative toxic (PBT) chemicals. Research will establish action priorities for a select list of PBT pollutants; screen and select more priority PBT pollutants for action; and develop a cross-cutting PBT routine monitoring strategy. Within

the 5-year scope of this Strategic Plan, EPA will continue to reduce risks to human health and the environment from current and future exposure to PBTs.

Computational Toxicology

The Agency is enhancing the scientific basis and diagnostic/predictive capabilities of existing and proposed chemical testing programs by using *in vitro* or alternative approaches such as molecular profiling, bioinformatics, and quantitative structure-activity relationships. The term "computational toxicology" refers to using these alternative approaches in conjunction with highly sophisticated computer-based models. This approach is expected to greatly reduce the use of animal testing to obtain chemical toxicity information. EPA research will provide methods for evaluating endocrine disruptors, as mandated by FQPA, and enhanced computer models that will predict, from chemical structure, adverse effects of a chemical or class of chemicals. Research will also evaluate and improve *in vitro* models, and *in vitro* assays. Within the 5-year scope of this *Strategic Plan*, EPA will:

- Advance the use of genomics approaches to provide data for the computational modeling of toxicological pathways for single chemicals or classes of chemicals;

- Enhance the scientific basis and diagnostic/predictive capabilities of existing and proposed chemical testing programs by using *in vitro* or alternative approaches such as molecular profiling, bioinformatics, and quantitative structure activity relationships; and

- Make progress in determining the genes responsible for specific mechanisms of toxicity, diagnosing patterns of genes associated with known mechanisms of toxicity, and characterizing and modeling chemical structures associated with known mechanisms of toxicity.

Human Capital Strategy

Activities within this goal are designed to protect, sustain or restore the health of people, communities, and ecosystems using integrated and comprehensive approaches and partnerships. To accomplish this goal, which comprises several media programs and relies heavily on the support of stakeholders, EPA will employ a mix of regulatory programs and alternative voluntary approaches. The Agency has completed workforce assessments for a broad cross-section of the programs that contribute to this goal to identify current competencies and skill gaps, and it is implementing strategies to attract, acquire, develop, and retain the talented and diverse workforce required to achieve the Agency's objectives for communities and ecosystems.

To meet our chemical emergency prevention and preparedness objectives, EPA will need

chemical engineers with experience at industrial facilities. These engineers work with facilities to reduce chemical risks in the community and to certify that chemical and oil facilities have site security measures in place. At the same time, EPA will need people capable of reaching out to, and building consensus with, the numerous stakeholders and state and local officials who are tasked with ensuring chemical emergency prevention, preparedness, and response. The Agency will use a variety of authorities to recruit a workforce that is balanced in career seniority, diversity, and tenure and, in so doing, will establish an effective, long-term staffing framework. In addition, the Creative Leadership Groups Project, a pilot leadership program for mid-level managers, will support the culture change needed to address current and future environmental challenges successfully.

As more communities and local and state governments develop smart growth programs and the policies and analytical tools for improved environmental management, EPA will need to build employee skills and competencies in land use planning, Geographic Information Systems, and facilitation to provide technical assistance to our partners. EPA will seek to attract staff with experience at the local level, as well with environmental media programs. EPA will also seek to recruit at least one land use attorney and one public health expert. In addition to traditional recruiting tools, EPA will take advantage of the EPA Intern Program, EPA detail assignments, and the Smart Growth Network to attract the most experienced and qualified individuals.

As a result of the authorities granted by the new Small Business Liability Relief and Brownfields Revitalization Act, EPA has expanded its Brownfields Program. This expansion will require additional Agency staff with effective outreach and grants management skills to work with and respond to the changing needs of local communities and state partners on brownfields revitalization.

To meet the present and future challenges of improving our Nation's waters, EPA will focus on recruiting environmental specialists to help protect and restore wetlands and marine and ocean ecological systems. EPA will train its workforce and partners through programs such as its "Water Careers Program"and "Watershed Partnerships Seminar" and will strengthen competencies to support core water programs. To carry out the enforcement and compliance assistance work that supports this goal, the Agency will need to develop technical, analytical, negotiation, and facilitation skills.

EPA needs to maintain critical scientific expertise for developing methodologies, data, models, risk assessment guidance, and toxicity testing methods and protocols to implement its regulatory statutes. EPA anticipates losing some of its critical scientists through retirement, and it is working on a strategy to recruit developmental and molecular biologists, toxicologists, modelers, engineers, chemists, and statisticians by using a variety of hiring authorities, internships, and fellowships.

To achieve EPA's Homeland Security goals, the Agency will need to maintain technical staff proficient in the building sciences and in assessing the human health effects of exposure to airborne

contaminants. Staff must also be skilled in education, outreach, and communications to develop and disseminate the information needed by the buildings community and the public to protect themselves from potential terrorist incidents.

To find the talent needed to achieve healthy communities and ecosystems, the Agency will take advantage of various hiring authorities and participate in a number of special recruitment programs, such as the Hispanic Association of Colleges and Universities and the Washington Internships for Native Students. Finally, the Agency will continue efforts to equip all employees with skills needed for leading people, leading change, developing business and technological acumen, being results driven, communicating effectively, and building teams. Employee development includes not only training, but also coaching, mentoring, rotational assignments, and many other tools.

Program Evaluation

The many Agency programs that contribute to the achievement of healthy communities and ecosystems have undergone various types of evaluations, and program managers have used the results of these evaluations to improve the effectiveness and efficiency of their efforts.

Regulation and Innovation in the Chemical Industry (Joint Research Center of the European Commission, 2000). The Center concluded from its research that risk-based testing regulations, such as those employed in the United States, appear to provide more incentives to innovate than do more fixed-base approaches, such as those used in the European Union. EPA was encouraged by this study to continue its strategy of emphasizing risk-based screening of new and existing chemicals. This approach is reflected throughout the Agency's strategic architecture for program measurement and assessment.

Great Lakes Program Evaluations, including the State of the Lakes Ecosystem conferences and reports by EPA's Inspector General, the General Accounting Office, and the International Joint Commission, were used in developing the Great Lakes strategy and its updated Lakewide Management Plans. The Strategy and Lakewide Management Plans set forth the goals, objectives, and targets for environmental progress at the Great Lakes basin-wide and lake basin-wide levels. Both the Strategy and the Lakewide Management Plans involve substantial public participation. Select indicators from the State of the Lakes Ecosystem conferences (coastal wetlands, phosphorus concentrations, sediment contamination, benthic health, fish tissue contamination, beach closures, drinking water quality, and air toxics deposition) served as the basis for Great Lakes sub-objective targets.

External Factors

EPA's ability to achieve its strategic objectives depends on many factors over which the Agency has only partial control or little or no influence. Partnerships, voluntary cooperation, international collaboration, global harmonization, industry, economic influences, industrial accidents, natural disasters, litigation, and legislation play critical roles, affecting the Agency's results. Changes in the focus, level of effort, or status of any of these components could affect the success of the Agency's programs under Goal 4. Consequently, EPA must consider these factors as it establishes annual performance measures and targets.

EPA's emphasis on partnerships with other federal agencies, states, tribes, local governments, and regulated parties magnifies our impact. It can also place the Agency in a dependent position. EPA coordinates with and uses information from a variety of federal, state, and international organizations and agencies to protect our health and our environment from hazardous or higher risk pesticides and toxics. EPA relies on others (states, the Department of Health and Human Services, and the Food and Drug Administration) to carry out some enforcement activities. EPA's lead program depends in part on the ability of the Department of Housing and Urban Development to renovate the Nation's stock of public housing.

The Brownfields Program, in which EPA partners with over 21 agencies and departments as well as with local communities, is one major example of the effectiveness of the collaborative approach. Although federal and state programs may be in place to address the difficult issues local communities face, too often the programs operate in isolation. The diverse expertise and experience of the agencies collaborating in the Brownfields Federal Partnership Action Agenda will help make all relevant federal programs work more productively for the people and communities affected by the presence of brownfields.

EPA and the Army Corps of Engineers often engage in cooperative efforts which frequently include other federal agencies, such as the U.S. Fish and Wildlife Service (USFWS), U.S. Department of Agriculture (USDA), National Oceanic and Atmospheric Administration, and the National Marine Fisheries Service. Annual or biannual tracking of wetlands inventory information will depend upon the ability of USFWS and/or USDA to upgrade their abilities to deliver more frequent wetlands inventory information for the Nation. At present, the USFWS National Wetlands Inventory is updated once each decade. Successful implementation of the wetlands provisions of the Farm Bill by USDA and its partners is critically important, as reduction of wetland losses in rural areas and most of the anticipated national gains will be a result of those programs.

EPA's pesticide programs also depend, in part, on the voluntary cooperation of the private sector and the public. Farmers favor broad-spectrum pesticides that are cheaper and easier to apply.

While the Agency reviews pesticides to ensure that they meet the current health and safety standards, it has limited impact on which of the registered pesticides are adopted. Therefore, accurate predictions on the extent of its adoption once a pesticide is registered are very difficult. Similarly, the Lead Program also depends on the success of its state partners in encouraging homeowners to correct lead-based hazards in the home (since home-owner participation is largely elective) and that of schools and parents in screening children for high blood levels of lead. If any of these partnerships are disrupted , EPA's ability to achieve its risk reduction goals will be significantly compromised.

International collaboration, guideline harmonization, information sharing, and building other nations' capacity to reduce risk also contributes to risk reduction, making EPA's effective consultation and communication critical to achievement of our goals. For example, several key factors, external to the Agency, may significantly affect the achievement of the Border 2012 goals and objectives. Border 2012 is a binational effort, and EPA recognizes that the results achieved will be based on the efforts of both partners. It will be essential for both the United States and Mexico to invest the necessary resources to achieve the goals and to collect the data needed to measure progress. Continued Great Lakes ecological improvement will rely on participation in the Great Lakes Strategy by our state, tribal, and federal partners and by Canadian efforts under the Great Lakes Water Quality Agreement. Until invasive species can be prevented from entering the Great Lakes through cargo ships, they will likely continue to impact the achievement of Great Lakes ecosystem goals.

Progress in reducing risks from new and existing chemicals is highly dependent on actions taken by industry in response to EPA assistance and initiatives. EPA has no direct control over the pace and volume at which industry develops new chemicals or pesticides for submission. EPA concentrates primarily on providing industry with tools, such as the PBT Profiler and Pollution Prevention Framework, to help screen out high-risk chemicals before they are submitted for EPA review. If industry should fail to respond to such initiatives, the Agency will be less able to achieve effective new chemical screening in an efficient manner. EPA's screening work on existing chemicals is dependent on industry response to the HPV Challenge Program, which operates exclusively on the basis of voluntary commitments to sponsor particular chemicals for review. While the Agency can provide incentives for the submission of registration actions such as reduced risk and minor uses, EPA does not control incoming requests for registration actions. As a result, the Agency's projection of regulatory workload is subject to change.

Economic growth and changes in producer and consumer behavior could also influence the Agency's ability to achieve its Objectives within the time frames specified. New technology or unanticipated complexity or magnitude of pesticide-related problems could also delay the Agency's achievement of Objectives. Economic conditions will affect EPA's ability to achieve its Brownfields Program objectives. Grant recipients leverage the cleanup funding as well as redevelopment funding needed at brownfield properties. But their ability to leverage this funding is dependent on economic

conditions external to EPA. The leveraging of funding for brownfields cleanup and redevelopment is also necessary for attendant job creation.

Finally, large-scale accidental releases, such as pesticide spills or rare catastrophic natural events (such as hurricanes or large-scale flooding) could impact EPA's ability to achieve objectives in the short term. In the longer term, the time frame for achieving the objectives could be affected by new technology or unanticipated complexity or magnitude of pollution-related problems. Newly identified environmental problems and priorities could have a similar effect on long-term goals. For example, pesticide use is affected by unanticipated outbreaks of pest infestations and/or disease factors, which require EPA to review emergency uses in order to avoid unreasonable risks to the environment.